This document attempts to provide a framework for evaluating the document "Geoscience Data and Collections: National Resources in Peril" with respect to the data life cycle model and related activities and concerns.

Title
"Geoscience Data and Collections: National Resources in Peril"

Authors
NRC Committee on Earth Resources, Board on Earth Earth Science and Resources.

What it is
A report from the Committee on Preservation of Geoscience Data and Collections to determine options and develop a strategy for preservation and management of subsurface geoscience data.

Focus
Preservation and management of physical data, saving existing collections.

Scope
Geoscience data and collections. Geoscience includes collective subdisciplines of the geological (solid Earth) sciences, including geobiology, geochemistry, geohydrology, geophysics, sedimentology, and stratigraphy, among others. In terms of geographic scope, the committee focused on geoscience data and collections of unconstrained geographic origin, but housed in the United States.

Risks, challenges addressed
Sufficient geoscience data and collections in the US are at risk of loss to fill at least 20 times the USGS Core Research Center in Lakewood, CO.

Goal
Develop comprehensive strategy to manage geoscience data and collections in the US.

Time scale
"The time is now." Immediate action.

data life cycle

	Activity	Form of activity mentioned in report (see below for details)
	plan	
x	collect	donation and reception guidelines
	integrate/transform	
x	publish	establish regional centers
x	discover/inform	emphasis on cataloging
x	discard/archive	established guidelines for discard/archive

Activities

Planning and Production

	Activity	Report Comments (C), Recommendations (R)
	Requirements Def	
	Planning	
	Development	
	Deployment	

	Operations	

Data Management

	Activity	Report Comments (C), Recommendations (R)
x	Collection	• (C) Report provides guidelines for assessing donation and reception priorities for donors and recipients of geoscience data and collections
x	Processing	
x	Quality Control	
x	Documentation	
x	Cataloging	• (R) Fund cataloging efforts to gather comprehensive information about existing geoscience data and collections. • (R) Provide access to these funds be on a competitive basis, give preference to institutions with holdings that meet the same priorities as those outlined above for preservation. • (R) With this initial catalog funding effort target 5 to 10 institutions each year until the nation's geoscience data and collections are adequately assessed. • (R) Implement electronic reporting as soon as possible, with additional funding as required to accelerate it.
x	Dissemination	
x	Preservation	• (C) Incentives (and even some mandates) for preservation of geoscience data and collections would encourage preservation efforts, and … partnerships and consortia are the most appropriate means by which to maintain long-term security for the various regional repositories
x	Stewardship	• (R) Establish three centers (one each in the Gulf Coast, Rocky Mountain, and Pacific Coast regions). • (R) Establish additional regional centers, as merited, over the next 5 to 10 years, and give preference to centers that meet three main criteria: 1) need for such a center in the region (i.e., active clientele, identified collections of high priority, at-risk data in the region), 2) broad involvement and support among various regional geoscience and other entities (government, academia, and industry), and 3) active participation of an independent, external science-advisory board. • (R) Centers should build upon existing expertise and infrastructure—such as state geological surveys, museums, universities, and private enterprises—and, where practical, encourage more efficient use of existing space be before expansion. • (R) Access to the center-establishment and improvement funds should be on a competitive basis. • (R) Include additional maintenance and operations expenditures, which would be re-evaluated regularly on a competitive basis, to ensure maximum utilization of each center (i.e., to encourage public outreach and awareness, use, and cost-sharing activities).
	Usage Tracking	

x	Final Disposition	• (C) Report establishes criteria for which geoscience data and collections to preserve: well documented, irreplaceable, potential applications, accurate, quality/completeness, non-replicative • (R) Place priority for rescuing geoscience data and collections on those that are in danger of being lost • (R) Direct highest priority for retention and preservation toward data and collections that are well documented and impossible or extremely difficult to replace

Usage

	Activity	Report Comments (C), Recommendations (R)
x	Discovery	
x	Reception	• (C) Report quotes NSF EAR (Division of Earth Sciences) guidelines for data sharing
x	Understanding	
x	Analysis	
x	Value-Added Products	
	User Feedback	
x	Citation	• (R) The geoscience community [should] adopt standards for citation in scientific and other publications of geoscience data and collections used.
	Tagging	
	Gap Assessment	

Overarching Concerns

	Activity	Report Comments (C), Recommendations (R)
	Principles	• (C) Not everything should be saved.
x	Governance	• (R) establish a distributed network of regional geoscience data and collections centers, each with an external science advisory board • (R) Establish a federal geoscience data and collections coordinating committee. • (R) The federal geoscience data and collections coordinating committee should appoint several federal external science advisory boards to advise on priorities for federal holdings, with respect to preservation, cataloging, and access among and within federal and quasi-federal agencies. • (R) The federal geoscience data and collections coordinating committee [should] monitor and facilitate progress of cataloging efforts across the federal government.
	Resources	
	Standards	
	Architecture	
	Assessment	

Perspectives

	Activity	Report Comments (C), Recommendations (R)
x	Scientific	• (C) Assessment of potential applications of data should be done by user community
x	Technical	

x	Organization/Institution	
x	Economic/Financial	• (C) The committee estimates that [the effort to create a catalog] would be effective if supported at the level of $5 million to $10 million per year. • (R) Establish a combination of federal, state, regional, and local government incentives and requirements for geoscience data and collections donations and deposition. Establishing such incentives should be an immediate priority to stem the tide of lost and discarded geoscience data and collections, many of which remain useful.
x	Policy/Legal	• (R) Federal agencies [should] be supported to the same extent as non-federal institutes and consortia with respect to cataloging and repositories, and with regular review. • (R) Priorities for federal agency support should closely follow those recommended for the regional centers: 1) need for such a repository in the agency, 2) broad or active involvement within and among various federal geoscience agencies (e.g., BLM, DOE, EPA, NASA, NOAA, NSF, USACE, USGS, USNM), and 3) active participation of independent, external science-advisory boards.
x	Socio-cultural	• (R) Institutions and professional societies [should] establish (where appropriate) awards and other forms of recognition for outstanding contributors to the preservation and accessibility of geoscience data and collections.

Other

Report Sponsors
American Association of Petroleum Geologists
American Association of PetroleumGeologists Foundation
American Geological Institute
Department of Energy– Fossil Energy
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Geological Society of America
National Science Foundation
Paleontological Society
Petrotechnical Open Software Corporation
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Users and Beneficiaries of Geoscience Data and Collections
Civil engineers
Climate researchers
Construction industry personnel
Defense industry personnel
Educators and students
Emergency preparedness personnel
Environmental engineers and scientists
Farmers and ranchers
Foresters
Hydrologists
Insurance industry
International commodity traders
Landowners and home-use owners

Lawyers
Oceanographers
State and federal policy makers, regulators, and agencies
The energy industry
The minerals industry
Urban planners

Discussion of terms "data" and "collection"

' “Data” and “ collections” were distinguished from each other on the basis of whether the physical item originated naturally (a rock, mineral, or fossil) or was produced from some other medium (a paper log, a magnetic tape, a picture); the former fell under the definition of collection and the latter fell under the definition of geoscience data (see Appendix D). The committee recognizes that the terms “ collections” and “ data” mean different things to different sectors of the geosciences. For example, the petroleum and mining industries consider rock cores and cuttings as “ data,” whereas the museum community considers them “ collections.” The definitions of these terms as used herein reflect the need for internal consistency within the report. '